

STRUCTURE 29

This structure is a reinforced concrete, gated spillway, with discharge controlled by four cable operated, vertical lift gates. Operation of the gates is automatically controlled so that the gates open or close in accordance with the seasonal operational criteria. The structure is located in the City of North Miami Beach near the mouth of Canal 9 (Snake Creek Canal) and about 500 feet from the shore of Lake Maule.

PURPOSE

This structure maintains optimum water control stages upstream in Canal 9; it passes the design flood (100 percent of the Standard Project Flood) without exceeding upstream flood design stage, and restricts downstream flood stages and discharge velocities to non-damaging levels; and it prevents saline intrusion during periods of high flood tides.

OPERATION

This structure will be operated to maintain an optimum headwater elevation of 2.0 feet when sufficient water is available to maintain this level. Moreover, it is used to control high water conditions at the west end of the C-9 canal insofar as practical.

The automatic controls function as follows:

When the headwater elevation rises to 2.5 feet, the gates will open at six inches per minute;

When the headwater elevation rises or falls to 2.0 feet, the gates will become stationary;

When the headwater elevation falls to 1.5 feet, the gates will close at six inches per minute.

Salinity Regulation

In addition to maintaining optimum upstream fresh water control, as described above under Flood Control Regulation, the automatic controls on this structure have an overriding control which closes the gates, regardless of the upstream water level in the rare event of a high flood tide, whenever the differential between the head and tailwater pool elevations reaches 0.3 feet.

In order to control flooding at the west end of the C-9 canal, the structure is operated as follows:

When the headwater elevation rises to 1.5 feet (at S-29), the gates will open at six inches per minute;

When the headwater elevation rises or falls to 1.2 feet, the gates will become stationary;

When the headwater elevation falls to 1.0 feet, the gates will close at six inches per minute.

A special timing device has been installed at this site to protect manatees, during automatic gate operation. This device causes alternate gate operation. During this operation, when the upstream float sensor indicates that the gate should open, two gates open a minimum of 2.5 feet. If opening results in a headwater stage below the gate close level, as it often does, these gates will close. Whenever the headwater stage again rises to the gate open level, the other two gates will open in a similar manner.

FLOOD DISCHARGE CHARACTERISTICS

	Design
Discharge Rate	<u>4780</u> cfs
	<u>100%</u> SPF
Headwater Elevation	<u>3.0</u> feet
Tailwater Elevation	<u>2.5</u> feet
Type Discharge	<u>uncontrolled submerged</u>

DESCRIPTION OF STRUCTURE

Type fixed crest, reinforced concrete gated spillway

Weir Crest

Net Length 88.0 feet

Elevation - 11.0 feet

Service bridge elevation 6.0 feet

Water level elevation which will by-pass structure 6.0 feet

Gates

Number 4

Size 15.0 ft. high X 22.8 ft. wide

Type Vertical lift

Bottom elevation of gates full open 4.0 feet

Top elevation of gates full closed 4.0 feet

Control On-site, automatic headwater control with differential water level override sensed by bubbler system and remote computer control

Lifting Mechanism

Normal power source commercial electricity

Emergency power source gasoline engine powered electric generator

Type Hoist direct drive electric motors, gear connected to cable drum

Date of Transfer: December 11, 1953

ACCESS: The structure is located about 500 feet downstream (east of U.S. Highway 1.

HYDRAULIC AND HYDROLOGIC MEASUREMENTS

Water Level: Remote digital headwater & tailwater recorders

Gate Position Recorder: Remote digital recorder on all gates.

Rain Gauge: Remote, digital recorder

DEWATERING FACILITIES

Storage Needles at Miami Field Station, beams at WPB Field Station

Type needle beams & vertical aluminum needles

Size & Number (per bay) _____

Upstream & Downstream

Number 1 beam; needles, 5 @ 4', 1 @ 3', 1 @ 2' wide

Size beam 24WF100, length 23' -11 needles 20' long